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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/727,947

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EXAMINER

WILCZEWSKI, MARY A

ART UNIT

PAPER NUMBER

2822

DATE MAILED: 12/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/727,947

Applicant(s)

BLALOCK, GUY

Examiner

M. Wilczewski

Art Unit

2822

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 October 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 14-25 is/are pending in the application.
- 4a) Of the above claim(s) 23-25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 14-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on December 3, 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office action is in response to the Amendment filed on October 19, 2005.

Drawings

The drawings filed on December 3, 2003, are acceptable.

Double Patenting

The double patenting rejection of claim 14 has been withdrawn in light of the terminal disclaimer filed on October 19, 2005.

Newly submitted claims 23-25 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: the newly-submitted claims recite a species of the claimed invention which is patentably distinct from that recited in claim 14. Nor is claim 14 generic to the invention recited in the newly-submitted claims.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 23-25 have been withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 14, 15, 19, and 20 are again rejected under 35 U.S.C. 103(a) as being unpatentable over Kovac et al., U.S. Patent 6,525,429, cited in Parent application Serial No. 10/086,907.

Kovac et al. disclose a semiconductor die package and a method of coating a semiconductor die with a polymer that is fully curable by exposure to ultraviolet light and that shrinks 10% or less by volume upon curing, see Figures 1 and 2. A semiconductor die 120 is coated with a compliant filler 170 which can comprise an elastomer, see column 6, lines 57-64. In column 5, Kovac et al. disclose an elastomer DOW 577 which shrinks approximately 5% during curing, see column 5, lines 60-63. It would have been obvious to one skilled in the art that the DOW 577 elastomer could have been used as the compliant filler 170, thereby yielding a semiconductor die package comprising a die 120 and conductive leads electrically connected to the die and a protective material 170 covering at least a portion of the die and at least a portion of the leads, wherein the protective material 170 is fully curable by exposure to ultraviolet light (column 5, lines 30-36) and shrinks less than 10% by volume upon curing (column 5, lines 60-63).

Claims 15-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Xu et al., U.S. Patent 6,168,898; cited in Parent application Serial No. 10/086,907; in view of Higgins, III et al., U.S. Patent 5,583,370, newly cited.

Xu et al. disclose a coating composition which comprises a mixture of a phenol-formaldehyde epoxy novolac resin (column 4, lines 32-35) and triaryl sulfonium hexafluorophosphate (column 3, lines 34-35), which is fully curable by exposure to ultraviolet light (column 7, lines 4+). Xu et al. disclose that the disclosed solution can be coated onto silicon wafers or gallium arsenide, see column 7, lines 22+. Admittedly, Xu et al. does not disclose that the disclosed composition can be coated onto a semiconductor die and conductive leads electrically connected to the die. However, it is known to in the art to employ polymeric coatings as encapsulants for semiconductor dies, see Figure 3 of Higgins, III et al. Higgins, III et al. disclose a semiconductor die package and a method of coating a semiconductor die package in which a radiation-curable polymeric solution 14' is coated onto at least a portion of a semiconductor die 12 and at least a portion of conductive leads 30 electrically connected to the die (see Figure 3). Coating 14' is an encapsulant, that is, a protective material, which comprises an epoxy and is curable by radiation, see column 7, lines 35-39. In light of the disclosure of Higgins, III et al., it would have been obvious to one skilled in the art that the composition disclosed by Xu et al. could be used as the encapsulant in the known method of Higgins, III et al., since the composition of Xu et al. is an epoxy-based resin and curable by radiation (UV). Alternately, in light of the teaching of Higgins, III et al., it would have been obvious to one skilled in the art that the composition of Xu et al. could

Art Unit: 2822

be used as an encapsulant for a semiconductor die, since Higgins, III et al. disclose that radiation-curable epoxy resins can be used as encapsulants for semiconductor dies.

Neither Xu et al. or Higgins, III et al. expressly disclose that the polymeric coating shrinks less than 10% upon curing. However, since Xu et al. discloses the same composition as presently claimed by Applicants, the coating composition of Xu et al. will *inherently* shrink less than 10 % upon curing.

Response to Arguments

Applicant's arguments filed October 19, 2005, have been fully considered but they are not persuasive. Applicant has argued that the DOW 577 elastomer of Kovac is heat-treated. However, Kovac discloses that the elastomer can be either heat treated or exposed to ultraviolet light or a combination of both heating and exposing, see col. 5, lines 30-36. In addition, claim 14 is a product claim. It has been well established that process limitations, in this case, "curable by exposure to ultraviolet light", cannot impart patentability to an old/known product. Process limitations are significant only to the extent that they distinguish the claimed product from that of the prior art. In this case whether the polymer is cured by heating or exposure to ultraviolet radiation is immaterial, since the resultant product is exactly the same, that is, a cured resin.

In addition, Applicant has argued that Kovac only teaches to coat one surface of die 120, hence, Kovac does not disclose surrounding or coating *substantially all of the die*. However, note in figure 2, that polymer 28 appear to only coat or surround one surface of die 10. Hence, since Applicant has failed to define what is meant by

Art Unit: 2822

“substantially all of the die”, this limitation has been interpreted in light of Applicant’s own disclosure. Since Applicant only shows coating or surrounding one surface of the die, and since this example is deemed to illustrate what is meant by coating or surrounding *substantially all of the die*, then Kovac, who also only coats one surface of the die, must also necessarily coat *substantially all of the die*.

Applicant has further argued that although Xu discloses phenol-formaldehyde novolac resins and triaryl sulfonium hexafluorophosphate are suitable materials for his dielectric, Xu does not even remotely suggest using these materials for semiconductor packaging. It was admitted in the rejection that Xu did not expressly disclose the coating of these materials onto a semiconductor die, which is why Xu was combined with Higgins, III et al., please note the above rejection.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

Art Unit: 2822

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. Wilczewski whose telephone number is (571) 272-1849. The examiner can normally be reached on Monday and Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Zandra Smith can be reached on 571-272-2429. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



M. Wilczewski
Primary Examiner
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